H16 RX-5/SBM INSTRUCTIONS FOR USE

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Continually adapted to the latest advances of modern technology, Bolex H 16 movie cameras offer a very wide range of possibilities. Manufactured with the utmost care and subjected to rigorous tests, these cameras meet the high standards of precision and quality for which the name of Bolex is world renowned. Thanks to its international organization, Bolex offers you impeccable after-sales service all over the world. You can entrust your camera with complete confidence to any Bolex distributor, most of whom have their own highly skilled technicians, specially trained in Switzerland. The H16 RX-5 and SBM models are identical as regards characteristics and operation, differing only with respect to the following:

H16 RX-5: lens-turret for 3 "C" mount lenses

H16 SBM: bayonet lens-mount

Your **H16 RX-5** movie-camera is supplied with:

- 1 filter-holder on the camera
- 1 set of 3 filter-holders
- 4 gelatin filters
- 1 rewind crank
- 1 rubber eyecup
- 1 turret locking screw
- 1 empty spool

Your H16 SBM movie-camera is supplied with:

- 1 filter-holder on the camera
- 1 set of 3 filter-holders
- 4 gelatin filters
- 1 rewind crank
- 1 rubber eyecup
- 1 protective cap for the lens-mount

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1 empty spool

Get to know your camera

- 1 Eyepiece locking screw
- 2 Eyepiece setting ring
- 3 Lever for disengaging spring motor
- 4 Threaded holes for various accessories and motors
- 5 Footage counter
- 6 Spring motor winding handle—spring run: 28 sec. at 24 f.p.s.
- 7 Side release for normal running, continuous filming (M) and single frame exposures (P). Can be operated by cable
- 8 Reflex viewfinder
- 9 Reflex viewfinder closing lever
- 10 Frame counter
- 11 Shaft for film rewind crank
- 12 Film plane guide mark
- 13 Variable shutter dial and control lever
- 14 Coupling spindle for electric motor ESM or EM
- 15 Exposure control knob for instantaneous
 (I) or time exposures (T)
 (single frame filming)
- 16 Front release for normal running
- 17 Filming speed selection knob





- 18 Saddle for 400 ft. magazine
- 19
- Upper spool shaft for feed spool Loop former locking lever and opening 20 knob
- 21 Upper sprocket
- 22 Upper loop former
- 23 Pressure pad locking pin
- 24 Pressure pad
- 25 Lower loop former Film knife
- 26
- 27 Lower sprocket
- 28 Knob for opening loopformer
- 29 Lever for suppressing audible signal
- 30 Feet setting on footage counter
- 31 Spool ejector
- 32 Retaining arm
- Lower spool shaft for take-up spool 33

H16 SBM

H16 RX-5





- 34 Tightening ring (bayonet-type)
- 35 Filter-holder locking knob
- 36 Gelatin filter-holder
- 37
- Bayonet-mount locking lever Cover for the clapstick lamp housing 38 (supplied with the sync-pulse accessory with the ESM motor)
- 39 Turret lever
- 40 Hole for turret locking screw
- Exposure meter shoe 41
- 42 Turret locking clamp
- Gelatin filter-holder 43
- 44 Cover opening knob
- Serial No 45
- 46 1/4" and 3/8" thread for attaching the camera

16 mm films

The H 16 RX-5 and SBM cameras take 100 or 50 ft. spools of single or double perforated 16 mm film. H 16 RX-5 and SBM cameras equipped with the 400 ft. magazine can also take 200' films on spool or 400' films on core. Films with a single row of perforations are used when a magnetic track is to be added to the original film.

At each extremity of the film there is a leader—approximately 6 ft. at the beginning and 3 ft. at the end—to prevent the sensitive film being exposed to light during loading or unloading. These leaders are usually removed by the processing laboratories.

Black-and-white and colour films come in various sensitivities, which are expressed in ASA or DIN degrees and indicated on the instructions leaflet accompanying each film. The date before which the film should be exposed is normally stamped on the film pack. 16 mm film is available in the unprocessed condition with a magnetic stripe for sound recording. We would advise you against using this film: the magnetic layer can cause premature wear on the parts which come into contact with it, particularly the pressure pad, and metal particles may find their way into the camera mechanism.

Film running times at the following filming speeds

The reflex viewfinder

The optical system of the H 16 RX-5 and SBM cameras allows for through-the-lens viewing during filming as well as when the camera is not running. The picture formed on the ground glass of the reflex prism is absolutely free from flicker.

The reflex viewfinder enables framing and accurate focusing. In addition, it enables you to estimate the depth-of-field, to check on the filter being used and to evaluate the illumination of the scene.

The reflex prism deflects, into the viewfinder, an average of 25% of the light passing through the lens. This factor has been taken into account in the table of exposure times on page 8.



H16 SBM Normal image area: 9.60 × 7.16 mm, R = 0.5 mm. TV frame: 8.40 × 6.30 mm,

R = 1.7 mm. Closing the viewfinder. If the reflex view-

finder is not used during filming, close it by moving the small lever (a) into a vertical position. If it is left open, there is a risk of sunlight or artificial light from behind the camera entering the viewfinder eyepiece and fogging the film.

f.p.s.	12	18	24	32	48	64
1 m (≃ 3 ft)	10.9 sec.	7.3 sec.	5.5 sec.	4.1 sec.	2.7 sec.	2 sec.
15 m (≃ 50 ft)	2 min. 44 sec.	1 min. 49 sec.	1 min. 22 sec.	1 min. 1 sec.	41 sec.	30 sec.
30 m (≃ 100 ft)	5 min. 28 sec.	3 min. 38 sec.	2 min. 44 sec.	2 min. 3 sec.	1 min. 22 sec.	1 min. 1 sec.



Focusing. Open the diaphragm wide, then turn the distance setting ring until the picture is in sharp focus on the ground glass. Then close the diaphragm to the correct setting.

Adjusting the viewfinder eyepiece to the operator's eyesight. This adjustment adapts the viewfinder to the operator's eyesight, whether or not he wears spectacles, and remains the same for all lenses used on the camera.

1. Remove the lens.

2. Loosen the eyepiece locking screw.

3. Point the camera at a well-lit subject (sky, white wall, etc.).

4. Turn the milled ring of the eyepiece until the grain of the ground glass appears perfectly sharp.

5. Tighten the locking screw.

If this adjustment is correct, a subject at infinity should appear perfectly sharp at full aperture, with the distance setting ring on the lens to infinity (∞) .

Optical equipment

The H 16 RX-5 and SBM cameras are designed to take almost all lenses available on the market, whether with Bolex bayonet mounts or "C" mounts.

The presence of the prism capturing light for the viewfinder requires no particular correction of the lenses, whose geometric opening does not exceed f/1.8, except in the case of certain special lenses with markedly conical emerging pencils of rays.

(Naturally, all Bolex lenses can be used on the H 16 RX-5 and SBM just as they are.)

H 16 SBM camera: attaching bayonet mount lenses

 After pressing down on the locking lever, loosen the milled ring and turn it as far as it will go.

- Remove the protective cover.

- Insert the lens into its housing; when the tongue with the guide mark on it is inserted in the top slot, the lens is in the best position for turning the rings; but you can also place the tongue with the guide mark in either of the other two slots if you wish.

- Tighten the milled ring.

To remove the lens:

- Unscrew the milled ring until stopped by the locking system: the lens cannot fall out.

 Press down on the locking lever and turn the milled ring as far as it will go: you can then take the lens out without any difficulty.

When you remove the lens, do not forget to put the protective cover on again, so as to avoid any dust getting in and being left on the reflex prism.

Attaching "C" mount lenses

"C" mount lenses can be used by means of an adaptor available as an accessory. The lens must be screwed onto the concave side of the adaptor. The lens + adaptor unit is attached to the lens mount of the camera as described above.

H16 RX-5

The turret. Simply by turning the turret, you can change rapidly from one focal length to another, from a medium long view to a long view or a close-up. To turn the turret, use its fold-away lever. In this way, there is no risk of accidentally moving the diaphragm and focusing rings. Three click stops ensure that the lenses are correctly positioned in front of the filming aperture. When using heavy lenses, such as zooms or telephotos with very long focal lengths, the turret should be locked (Pos. 2) with a special clamp.

Correct position of the lenses on the tur-

ret. Keep the lenses positioned as shown below, so that there is a reasonable distance between the wide-angle lens (1) and the long focal length lens (3). When using a heavy lens (a zoom, for example), the turret should be locked with a screw.

Lenses should be held by their rear rings (a) when being screwed into the turret.

Focusing

The reflex viewfinder of the H 16 RX-5 and SBM cameras shows you the picture as it will appear on the film, with its sharp and blurred areas faithfully reproduced. It is thus simple to focus accurately and, at the same time, to estimate the depth-of-field.

The depth-of-field is the area within which the picture is in focus. It varies according to the focal length of the lens, the diaphragm opening and the filming distance. The longer the focal

Filters

length, the wider the diaphragm opening or the shorter the filming distance, the shallower the depth-of-field will be. Focusing must therefore be especially accurate.

Conversely, the shorter the focal length, the smaller the diaphragm opening or the longer the filming distance, the wider the depth-of-field will be—and the greater the margin for focusing inaccuracy.

On most lenses, a depth-of-field scale indicates the distances within which the picture will be in focus. Lenses are also supplied with a depth-of-field chart. Distances are calculated from the film plane, marked $\varphi.$

Diaphragm setting

The lens diaphragm controls the amount of light reaching the film and is adjusted according to the lighting conditions, the film sensitivity, the filming speed and the position of the variable shutter. The amount of light admitted by the diaphragm is doubled at each successive setting, starting from the highest figure. For instance, moving the diaphragm setting from f/11 to f/8 doubles the amount of light passing through the lens.

The use of an exposure meter safeguards against exposure errors. In the table below, use the figures given under the heading "photometric exposure time": they have been calculated to allow for the light deflected by the reflex prism.

Exposure times (in fractions of a second)

Filming speed	Shutter open Lever up		Shutter ¼ closed Lever on ½		Shutter ½ closed Lever on 1	
	Real	Photo- metr.	Real	Photo- metr.	Real	Photo- metr.
12 f.p.s. 16 f.p.s. 18 f.p.s.	1/33 1/45 1/50	1/40 1/55 1/60	1/45 1/60 1/70	1/55 1/75 1/87	1/75 1/100 1/110	1/94 1/125 1/137
24 f.p.s.	1/65	1/80	1/90	1/112	1/150	1/188
32 f.p.s. 48 f.p.s. 64 f.p.s.	1/90 1/130 1/180	1/110 1/160 1/220	1/120 1/180 1/240	1/150 1/225 1/300	1/200 1/300 1/400	1/225 1/375 1/500
Speed control knob	Single-frame exposure		(selector in position I)			
on 18-64 f.p.s.	1/30	1/40				

H16 SBM

A filter-holder (a) slides in the lens mount, in front of the reflex prism.

This filter-holder is removable and can be set to two positions:

Filter-holder pushed in completely, lever in slot (c); the gelatin filter is in the filming position. Filter-holder half-way; lever turned back into slot (d); the gelatin filter is not in use. To remove filter-holder, push knob (b) downward and pull lever horizontally.

Note. A filter-holder should always be in the camera to prevent stray light from fogging the film.

To insert or replace a gelatin filter, proceed as follows:

 Open the filter mount by pushing the lever in the direction shown by the arrow.

- Trim the gelatin filter to the required size (simply divide a filter 2" square into 4 sections of $1'' \times 1''$).

 Separate the two sides of the filter mount, slide the filter into position and replace the lever, making sure that this is correctly angled in relation to the filter mount notch (e).

Focusing adjustment. Placing a filter behind the lens slightly alters the lens focusing. However, the necessary correction is automatically made when the reflex viewfinder is used.

Important. Because of its distance from the film plane, the filter mount cannot be used as a mask holder for trick effects, such as keyhole and binocular cut-outs. The shape of the mask will not appear on the film and it will only darken the scene.

H16 RX-5

The H 16 RX-5 movie-camera is provided with a slot into which the filters fit, between the turret and the reflex prism. The filters therefore remain in place whichever lens is being used. When filming without a filter, an empty filter holder should be left in the slot to prevent light infiltration which would fog the film. See that the filter mount is firmly located in the slot.

Mounting gelatine filters. Filters are mounted as follows:

1. Remove the fastening clamp (a) from the filter mount.

2. Open the spring blades (b) and (c).

3. Insert the cut-out-filter (d) between the blades.

4. Press the spring blades (b) and (c) together between thumb and index finger.

5. Replace the fastening clamp (a).

When you have finished, put the filter-mounts in their case to protect them from dust.

Camera operation

Winding the motor

Move the side release to STOP and the motor disengaging lever to MOT. Lift the motor winding handle, which automatically engages with the spindle, and turn anti-clockwise. Wind the spring motor fully but without forcing it, then lower the handle and secure it on catch (a).³ Otherwise, there is a risk of it turning with the motor during filming.

Fully wound, the motor drives nearly 18 ft. of film, i.e. 28 seconds' filming time at the speed of 24 f.p.s. Make a habit of rewinding the motor after each take, regardless of how much power is still in reserve.

Filming speeds

The camera has seven filming speeds: 12, 16, 18, 24, 32, 48 and 64 frames per second. To select the desired speed, turn the control knob (b) until the corresponding figure is opposite the red dot. When the film is projected at normal speed (18 or 24 f.p.s.), a lower filming speed will produce an accelerated motion effect. When changing filming speed, do not forget to alter the diaphragm setting. When changing from 24 to 32 f.p.s., the diaphragm should be opened half a stop, from 24 to 48 f.p.s. by a whole stop and from 24 to 64 f.p.s. by 1½ stops (see page 8).

Important. When the camera is not loaded, it should not be run at speeds over 32 f.p.s. as this could damage the mechanism.

Release selector

The H 16 RX-5 and SBM cameras can be used for normal, continuous or single-frame filming. These different operations are controlled by the *side release*.

Normal filming. This filming method is suitable for most general shots. The camera runs as long as the operator depresses the front release or pushes the side release towards M (generally by using a cable).

Cable release. For maximum stability, when the camera is mounted on a tripod, it is advisable to use a cable release which fixes, by means of an adapter, onto the side release knob.

Single frame filming. Push the side release to P.

Instantaneous: turn the knob until the guide mark is in position I.

Time exposures: guide mark in position T

(for use in poor lighting conditions, such as indoors).

When making time exposures, open the variable shutter fully or one of its blades may mask part of the picture.

You can also use the electric motor and the Bolex Variotimer Single Frame Unit which ensure absolutely constant exposure time for every frame. This prevents the slight flicker which inevitably results from using a spring motor. Single frame filming is used for titles, cartoons, scientific films and various trick effects, particularly accelerated motion (clouds, sunsets, comic effects, etc.). Use a cable release to prevent any risk of camera movement.

Continuous filming. Push the side release to M.

The camera will continue running as long as the motor is wound. To stop the camera, move the side release back to STOP.

Disengaging the spring motor. The spring motor can be disengaged (see on the same page "Hand cranking").

ESM self-regulating multi-speed motor

The ESM motor which fits on to the H 16 RX-5 and SBM cameras is designed for filming *with synchronous sound recording*. This electronically regulated auxiliary motor drives the film at the perfectly stabilized speeds of 10, 18, 24, 25 and 50 f.p.s. and is used with the same Crystal Control Unit and Sync Pulse equipment as the H 16 EBM Electric and H 16 EL cameras.

Hand cranking. The mechanism of the H 16 RX-5 and SBM cameras can operate in reverse as well as forward motion by means of a small auxiliary crank. The spool can thus be fully rewound and a partly exposed film removed from the camera. This is particularly useful for special effects, such as lap dissolves, double exposures and trick effects.

To rewind the film:

1. Disengage the motor by moving lever (1) to 0. If you feel a slight resistance towards the end, do not force the lever but press the front release while continuing to move the lever.

2. Move the side release (2) to M (continuous filming).

3. *Close the variable shutter* by lowering lever (3) so as not to fog the film.

4. Turn the hand crank (4) in the direction of the engraved arrow but do not try to rewind the film faster than allowed by the speed governor.

To resume normal motor-driven operation, move the side release to STOP and the disengaging lever to MOT.

Do not forget to re-open the variable shutter.

Important. The reverse system is designed for rewinding only and should not be used for filming.

Variable shutter

The H16 RX-5 and SBM cameras are equipped with a shutter whose aperture can be varied both when the camera is running and when it is stopped. This enables you to reduce exposure time without changing the filming speed. In dazzling light, such as snow and water scenes, the variable shutter can be used to reduce exposure, thereby often eliminating the need for a neutral density filter.

The shutter can be locked in each of its four positions by pushing the lever inwards. The 1/4 and 1/2 closed positions are marked on the face of the lever by the figures ½ and 1, which signify:

1/4 closed position (marked 1/2): the diaphragm should be opened half a stop to compensate for the reduced exposure time, due to the shutter being ¼ closed.

1/2 closed position (marked 1): the diaphragm should be opened one stop.

A triangular warning signal appears in the reflex viewfinder when the variable shutter is not in the fully open position.

Use of the variable shutter. The variable shutter enables you to achieve various effects, without the need for any other accessories. Some are described later.

Dissolves

Fade-in. A film beginning abruptly with a title or a brillantly lit scene may dazzle the eyes of an audience in a darkened room. The eye needs only between ½ second and 2 seconds to become adapted to the brightest screen image, if the transition is gradual. In such cases, it is a good idea to introduce the opening scene with a fade-in, using the variable shutter, as follows:

1. Close the variable shutter without locking the control lever.

2. Start the camera with the left hand while simultaneously opening the shutter with the right, using the lever. To ensure a smooth movement, press the middle finger against the edge of the turret and, holding the small black

lever knob firmly between thumb and index finger, move the lever gently forward. Before beginning to film, practice making this movement smoothly and, particularly, making it

last the desired time. Duration can be checked by repeating aloud a previously timed phrase. Alternatively, you can use the audible signal (see page 16).

3. Continue filming until the end of the first sequence.

4. For safety's sake, lock the lever in the "open" position before filming further sequences.

Fade-out. A gradual darkening at the end of the last scene avoids an abrupt finish. The fade-out can be slower than the fade-in and is achieved in the same way, only in reverse or-der.

Transitional fade. If you cannot avoid linking two scenes with an appreciable difference in light, the transition will be smoother if you end the first scene with a fade-out and begin the second with a fade-in. To avoid a break in continuity, these two fades should not last longer than two or three seconds.

Lap dissolve. A lap dissolve is unquestionably one of the most pleasing ways of linking two sequences. It is made by superimposing a fadein on a fade-out so that one picture gradually disappears as the next gradually appears. This makes for a very smooth transition during which the picture brightness scarcely varies.

To produce a lap dissolve:

1. Close the sequence with a fade-out, without interrupting filming and without regard to the frame counter.

2. Lock the shutter in the "closed" position.

3. Set the two dials of the frame counter to zero.

4. Disengage the motor and rewind the film in reverse until the frame counter indicates the figures corresponding to the duration of the fade-out.

Move the side release to STOP and the lever to MOT.

6. Frame the second sequence and release the shutter lever.

7. Press the release and simultaneously make a fade-in of the same length as the previous fade-out.

8. Continue filming.

N.B. Producing these fades is greatly facilitated by using the variable shutter automatic control, the RX-FADER.

Duration	Filming speed			
of fade in seconds	18 f.p.s.	24 f.p.s.		
1½	973	964		
2	964	952		
21/2	955	940		
3	946	928		

Double exposures

In order to enhance the artistic effect of a sequence, the professional cameraman sometimes uses double exposures, i.e. the superimposing of two different scenes filmed on the same length of film.

To double expose the whole sequence:

1. Set the lens diaphragm according to a lightmeter reading.

2. Half close the variable shutter by locking the lever in position "1".

3. Set the frame counter to zero.

- 4. Film the first scene.
- 5. Note the reading of the frame counter.

6. Fully close the variable shutter and lock the lever in that position.

7. Disengage the motor and wind the film back until the frame counter again reads zero.

8. Engage the motor.

9. Free the variable shutter lever and lock it in position "1".

 Film the second sequence until the frame counter reaches the figure noted under point 5.
 Open the variable shutter and lock its lever in that position.

Choosing a more favourable diaphragm

opening. As a rule, very small diaphragm apertures should be avoided, as there is a risk of diffraction affecting picture quality. Moreover, with some film sensitivities and lighting conditions, even the smallest diaphragm opening cannot prevent over-exposure. As the variable shutter permits reduced exposure time without changing the filming speed, both these risks are greatly minimized and a neutral density filter is unnecessary.

Increased picture definition. Closing the variable shutter reduces exposure time and thereby increases the sharpness of moving subjects. However, if the filming speed is not increased, this procedure can result in jerkiness on the screen.

In special cases, where picture sharpness is more important than steadiness (such as frameby-frame analysis of scientific phenomena, sports contests and motion studies), it is an advantage to be able to reduce exposure time, without changing filming speed, as this diminishes the blur caused by a moving subject.

Loading

Now that you are familiar with the various features of your camera and know how they are operated, you are ready to start loading. To avoid exposing the edges of the film to light, the camera should be loaded in a dimly lit place, well away from sunshine.

Before loading the camera:

1. Set the side release (1) to STOP.

2. Set the disengaging lever (2) to MOT.

3. Move the selection knob (3) until the number corresponding to the desired filming speed faces the red dot.

4. Wind the camera (page 10).

Inserting the film

Turn the lid opening knob in the direction marked by the arrow, then lift off the lid. The inside of the camera is as shown in the illustration.

Prepare to load the film as follows:

1. Check that the pressure pad pin (a) is locked and that the pressure pad cannot open.

2. Remove the empty spool from its spindle by pressing ejector (b) and place the spool hold-ing the film on the upper spool shaft (film should run in the direction indicated by the engraved arrow).

In the film gate, the dark, shiny side of the film (the backing) should face towards the back of the camera and the light matt side (sensitized) towards the lens.

3. Using the film knife, cut off the end of the film diagonally between two perforations, as shown in the illustration. Remember to remove the piece which has been cut off.

4. Close the loop formers by moving the control lever (c) parallel to the pressure pad.

5. Press the release while simultaneously pushing the end of the film against the sprocket. *The film is automatically threaded into the camera.*

 Continue to depress the release until 10 to 12" of film have passed through the drive mechanism.

 Open the loop formers by pressing knob (d). (If you accidentally leave them closed, they will automatically open when the camera lid is replaced.)

8. Insert the end of the film into the slot in the core of the take-up spool. Rotate until about three turns of film have been taken up and place the spool on the lower spool shaft.

9. Turn the take-up spool by hand, clockwise, to take up any slack film.

Final check. Press the release and run the camera for serveral seconds to ensure that the film is advancing normally and the loops at either end of the film gate are forming correctly. Replace the lid and lock it by turning the knob clockwise. If it does not lock, do not force the ring! The spools or the pressure pad may be incorrectly positioned.

Finally, press the release until the film leader has been taken up. The camera is now ready for use.

Footage counter

The footage counter shows the length of film that has been exposed. Once the camera is loaded, this counter reads "ft". Run the camera until the figure 0 arrives opposite the white line in the centre of the red mask. This indicates that the film leader has been taken up and you can start filming. The counter automatically returns to "ft", when the camera lid is removed for loading or unloading film.

The footage counter is sufficiently accurate for ordinary filming. For special effects that require absolute precision, the frame counter should be used.

The mask on the footage counter can be rotated half a turn to show a scale in meters.

Frame counter

By indicating the exact number of frames exposed, this counter is invaluable for scientific studies, as well as various effects, such as lap dissolves and double exposures. It is also very useful for single frame filming.

The upper dial adds the frames in forward run and subtracts them in reverse run, from 0-50 frames.

The lower dial totalizes, in units of 50, the frames in forward run and subtracts them in reverse run, up to 1000 frames.

Beyond this figure, the cycle starts again and the figures shown on both dials should be added to the 1000 frames already totalized. Take no notice of the relative positions of the dials but only of their readings.

You can easily check if the figures shown on the frame counter refer to the first or second

cycle, by looking at the footage counter. 1000 frames of 16 mm film correspond to 25 ft. To set the frame counter to zero, use knob (a) which controls the upper dial and knob (b) which controls the lower "totalizer" dial.

Audible signal

A clicking sound marks the passage of each 8" of film and is heard approximately every second at the speed of 24 f.p.s., every 1½ seconds at 18 f.p.s. The length of a scene can thus easily be estimated while filming. To reduce the strength of the audible signal, or to eliminate it altogether, move the small lever inside the camera, next to the counter pin, towards zero.

Unloading

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When the film is fully exposed

When the footage counter shows that the film is entirely exposed, run the camera for about 10 seconds to wind the end leader on to the takeup spool. Before opening the camera, make sure there is no film left in the gate, as follows: Move the exposure knob guide mark to position T and remove the lens to reveal the aperture. Then push the side release to P to open the shutter. If any film remains, it will be seen, as an ivory coloured rectangle, in the aperture. Only one frame will be lost by making this check. Do not open the camera in bright light or the sensitive film may be fogged.

Spool ejector. This device simplifies spool changing.

A slight pressure on the ejector lever frees both spools, which can then easily be removed from the camera. Holding it firmly so that the film cannot unwind, place the full spool in its metal container.

When the film is only partly exposed

A partly exposed film can be removed from the camera as follows:

- 1. Note the figure on the footage counter.
- 2. Close the variable shutter.

3. Disengage the motor and rewind the film until the sign "ft" appears opposite the white line in the mask.

4. Open the camera lid and unload the camera in a dim light.

5. Do not forget to open the variable shutter before beginning the new film.

To replace a partly exposed film in the camera:

6. Load the camera as described on page 15.

7. Close the variable shutter.

8. Press the release until the footage counter reaches the figure already noted.

 Before beginning to film, it is advisable to press the release and run the camera for a second or two, to avoid the risk of double exposure.

N.B. For greater accuracy, use the frame counter which enables you to recommence filming from exactly the frame where you left off.

Faulty films and their possible causes

Film all black

Variable shutter left closed.

Film under-exposed, pictures reversed, general orange tint

Film incorrectly loaded with dark side facing towards the lens.

Pictures too dark and flat

Under-exposure (too small a diaphragm opening for the filming speed, film sensitivity and shutter aperture).

Pictures too clear and washed-out

Over-exposure (too wide a diaphragm opening for the filming speed, film sensitivity and shutter aperture).

Blurred pictures

Inaccurate distance setting.

"Jumpy" pictures

Camera unsteadiness or panning too rapidly

Unnatural colouring

Using filters designed for black-and-white film when shooting in colour.

Too long a delay between exposure and development. Films poorly stored before or after exposure.

Dominant red-orange tint

Filming too early in the morning or too late in the evening.

Using tungsten lamps with a daylight type film or an under-powered lamp with "artificial light" film.

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Dominant blue tint

Filming distant subjects at high altitudes or on water without the appropriate filter. Water scenes with strong reflections, filmed without polarizing filter.

Partly obscured pictures

An object, such as a finger or a long telephoto lens, in front of the taking lens.

Parallel scratches on the edge of the film

Dust or particles of emulsion in the film gate. Camera badly loaded.

Fogged film

Direct light entering through the reflex view-finder.

Film fogged at edges

Careless loading or unloading of the camera so that sensitive film was accidently exposed to light. The filter-mount left out of its slot.

Out-of-focus or distorted picture

Pressure pad incorrectly locked.

Carefully following the instructions in this booklet, you will help to avoid the above mistakes and produce excellent films.

How to look after your camera

The interior of the camera, housing the film drive mechanism, must be kept spotless. Gelatine deposits and dust sometimes accumulate in the gate and on the pressure pad when unexposed film is run through the camera and should be removed as follows:

a) Open the pressure pad by lifting its pin.

b) Unscrew the shaft and remove the pressure pad by pulling it towards you.

c) Gently clean the gate and pressure pad, paying special attention to the aperture, using a clean cloth wound round the end of a small stick. If the gelatine deposit is hard to remove, damp the cloth and thoroughly dry the part after cleaning.

d) Replace the pressure pad.

Reflex prism. The reflex prism in front of the aperture can be reached by removing the lens. As it is mounted on hinges, it can be swung out for cleaning the back and the ground glass. Use a soft, dry brush or special paper for clean-

ing these parts. The prism can be cleaned even when the camera is loaded (preferably in the shade).

Important! The reflex viewfinder must not be dismantled.

Lenses. Keep the outer surfaces of your lenses absolutely clean with the special soft tissue paper sold in photographic shops. Avoid rubbing the lens more than necessary as this could damage the anti-reflection coating. Screw on the lens caps between takes. Special care should be taken to avoid dust or fingerprints (perspiration attacks glass).

Special care of the camera in tropical

regions. Various precautions should be taken to protect both camera and film against heat and humidity.

Airtight boxes are available to store films in the tropics. Never leave film in the camera longer than the time necessary to expose it. The camera and all accessories should be cleaned regularly and thoroughly. Leather and the carrying cases should be treated with special product available from leather merchants. To prevent hot, moist air from condensing and aiding the formation of bacterial growths, do not place your equipment in its cases between takes, but leave it freely exposed to the air. However, for storing your equipment, especially during the monsoon season, use airtight tin boxes with a silica gel or calcium chloride humidity absorber. Avoid using these chemicals too liberally, however, to prevent excessive drying, which might damage leather and film. A relative humidity of 35 to 40% is satisfactory. Care should be taken to prevent any of the chemical coming into contact with your equipment.

Precautions against cold and sand. If you are going to film at high altitudes or in very cold climates, send your camera to the Bolex agent for special greasing and winterizing. Guard against getting sand or dust in your camera, which could scratch or damage its mechanism. Where necessary, put the camera in its case between each take and, for extra protection, put the case in a plastic bag.

Lenses and principal accessories

Lenses

• with fixed focal length: Kern Switar 10 mm f/1.6 Aspheron 5.5 mm super-wide-angle optical accessory for Switar 10 mm f/1.6 Kern Macro-Switar 26 mm f/1.1 Kern Macro-Switar 75 mm f/1.9

• zoom type:

Kern Vario-Switar 100 POE 16–100 mm f/1.9 Kern Vario-Switar 12.5–100 mm f/2 Kern Vario-Switar 12.5–100 mm f/2 with Aspheron 6.5 mm Angénieux 10 ×12 C 12–120 mm f/2.2 Sopelem Pan-Cinor 85 "Compact" 17–85 mm f/3.8

"C" mount \rightarrow bayonet mount adapter

H 16 SBM: the camera also accepts most lenses with "C" mount in combination with an adapter.

Extension tubes

Extension tubes are employed to achieve extreme magnification of minute subjects such as insects, filmed at very close range.

Hand grip

Tripod

Monopod

Shoulder brace

400 ft magazine

(For H 16 cameras equipped with an electric motor.) Easily mounted and removed, this magazine can take 200 ft spools or up to 400 ft of film on rolls.

Bellows lens hood

This accessory, which increases the professional appearance of H 16 cameras, greatly simplifies the achieving of trick effects.

ESM self-regulating multi-speed motor

The ESM motor which fits onto all H16 cameras equipped with the 1:1 spindle is designed for filming with synchronous sound recording.

Single-Frame Unit

This device enables the camera to film a single frame at a time, over a long period, while ensuring perfectly constant exposure times.

EM motor

(For all H 16 cameras equipped with the 1:1 spindle.) The EM motor has been designed for filming without synchronous sound recording.

RX-Fader

This device smoothly and automatically opens and closes the variable shutter (fades and lap dissolves).

Blimp

Sound-proof cover for filming with synchronous sound recording (H 16 camera + 400 ft magazine + ESM or EM motor).

Bolex International S.A. Yverdon (Switzerland)

Bolex International S.A. reserves the right to modify, without prior notification, the design and features of the equipment described in this manual.